

Report of Test

LLIA001421-002

Indoor Distribution Photometry Test Report

Catalog Number: QR2-MO-K40-80-4-XX-PB 600G2-UNV-DIM1

Recessed mounted, extruded aluminum housing, white enamel aluminum LED tray,
formed semi-specular aluminum baffle with frosted plastic insert.

128 white LEDs, two PAL 6000201 rev1 LED boards with 64 LEDs each.

One Osram Optotronic OTi 50/120-277/1A4 DIM-1 L G2 LED driver programmed at 730mA



Prepared For:

Precision Architectural Lighting
4830 Timber Creek Drive
Houston, TX 77017, USA

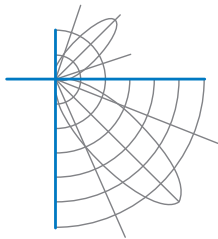
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	1540.0 Lumens
Input Current	0.1685 A	Total Efficacy	81.3 Lm/W
Input Power	18.95 W	Downward Flux	1540.0 Lumens
Frequency	60.00 Hz	Downward Flux	100.0 % of Total
Power Factor	0.937		
Current THD	10.7 %		

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

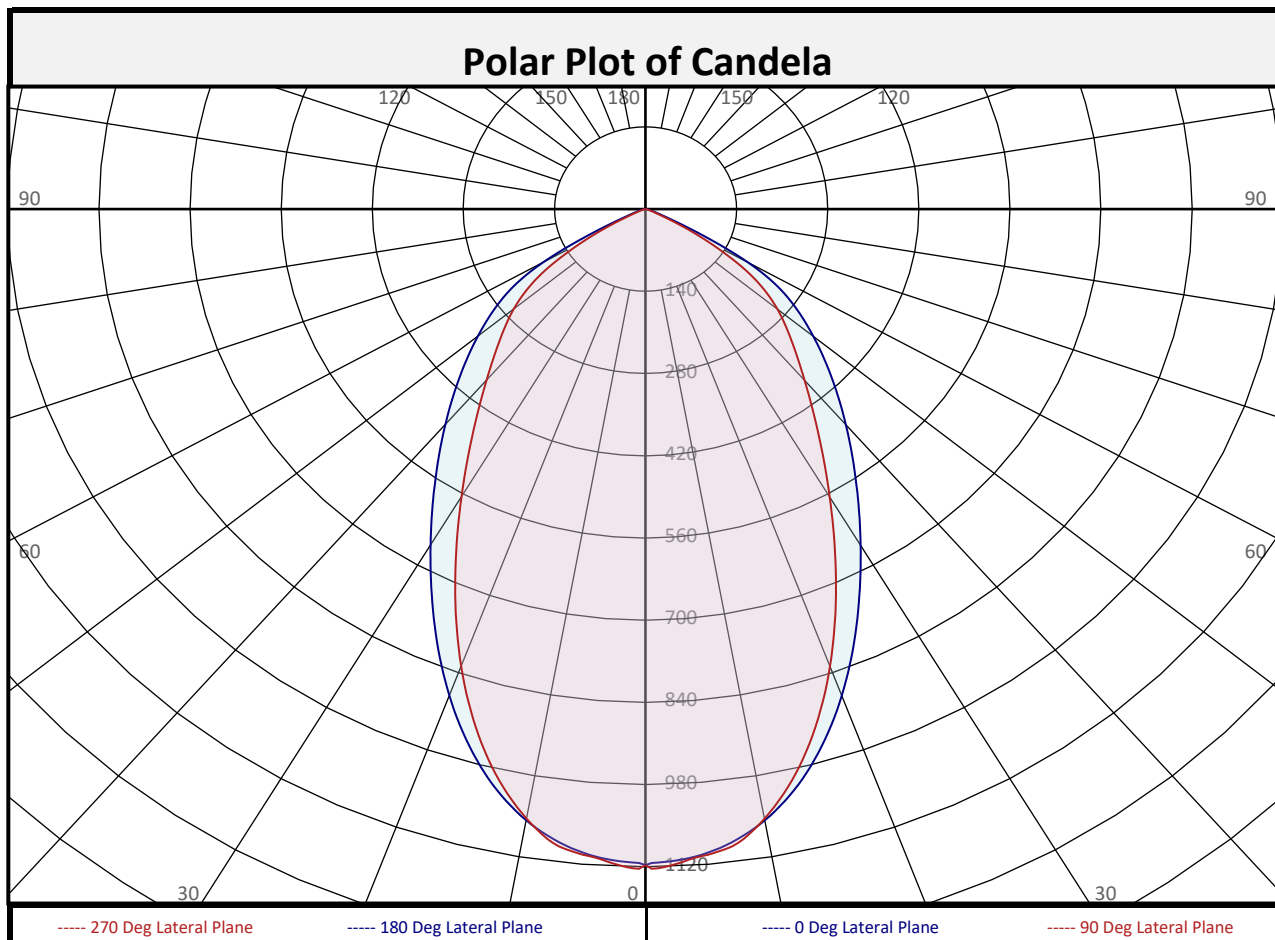
Test date: 03/05/2021

Report date: 03/08/2021

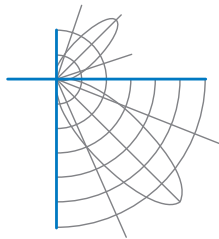
Signed: _____



Report of Test
LLIA001421-002



Zonal Flux Summary										
Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	103.7	6.7%		90-100	0.0	0.0%		0-20	374.9	24.3%
10-20	271.2	17.6%		100-110	0.0	0.0%		0-30	711.5	46.2%
20-30	336.7	21.9%		110-120	0.0	0.0%		0-40	1027	66.7%
30-40	315.5	20.5%		120-130	0.0	0.0%		0-60	1478	96.0%
40-50	262.9	17.1%		130-140	0.0	0.0%		0-80	1539	99.9%
50-60	188.6	12.2%		140-150	0.0	0.0%		10-90	1436	93.2%
60-70	54.2	3.5%		150-160	0.0	0.0%		20-50	915.0	59.4%
70-80	6.4	0.4%		160-170	0.0	0.0%		40-90	513.0	33.3%
80-90	0.8	0.1%		170-180	0.0	0.0%		60-90	61.5	4.0%
0-90	1540	100.0%		90-180	0.0	0.0%		0-180	1540	100.0%

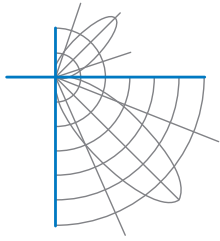


Report of Test

LLIA001421-002

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	1117	1117	1117	1117	1117	1117	1117	1117	1117
	2.5	1110	1109	1111	1114	1116	1114	1111	1109	1110
	5	1100	1097	1096	1101	1104	1101	1096	1097	1100
	7.5	1082	1077	1080	1088	1089	1088	1080	1077	1082
	10	1057	1050	1059	1057	1054	1057	1059	1050	1057
	12.5	1023	1018	1022	1014	1009	1014	1022	1018	1023
	15	982	980	976	964	955	964	976	980	982
	17.5	934	934	923	905	894	905	923	934	934
	20	882	882	864	842	829	842	864	882	882
	22.5	827	823	802	775	760	775	802	823	827
	25	770	763	737	708	692	708	737	763	770
	27.5	714	703	673	642	627	642	673	703	714
	30	661	644	610	579	566	579	610	644	661
	32.5	610	588	551	521	511	521	551	588	610
	35	563	536	496	469	462	469	496	536	563
	37.5	520	488	445	422	418	422	445	488	520
	40	479	443	400	380	380	380	400	443	479
	42.5	440	402	359	344	347	344	359	402	440
	45	404	364	322	312	317	312	322	364	404
	47.5	370	328	289	282	291	282	289	328	370
50	336	295	258	255	264	255	258	295	336	
52.5	304	263	229	225	235	225	229	263	304	
55	271	231	199	193	201	193	199	231	271	
57.5	234	196	165	155	158	155	165	196	234	
60	183	152	126	112	111	112	126	152	183	
62.5	114	99	82	71	67	71	82	99	114	
65	57	51	44	39	31	39	44	51	57	
67.5	29	25	21	19	16	19	21	25	29	
70	17	15	12	11	10	11	12	15	17	
72.5	11	10	8	7	6	7	8	10	11	
75	7	6	5	4	4	4	5	6	7	
77.5	5	4	4	3	3	3	4	4	5	
80	3	3	2	2	1	2	2	3	3	
82.5	2	2	1	1	1	1	1	2	2	
85	1	1	1	0	0	0	1	1	1	
87.5	0	0	0	0	0	0	0	0	0	
90	0	0	0	0	0	0	0	0	0	



Report of Test

LLIA001421-002

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		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0
	142.5	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0
	147.5	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	
152.5	0	0	0	0	0	0	0	0	0	
155	0	0	0	0	0	0	0	0	0	
157.5	0	0	0	0	0	0	0	0	0	
160	0	0	0	0	0	0	0	0	0	
162.5	0	0	0	0	0	0	0	0	0	
165	0	0	0	0	0	0	0	0	0	
167.5	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	
172.5	0	0	0	0	0	0	0	0	0	
175	0	0	0	0	0	0	0	0	0	
177.5	0	0	0	0	0	0	0	0	0	
180	0	0	0	0	0	0	0	0	0	



Report of Test

LLIA001421-002

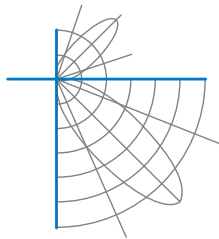
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	112	109	106	103		109	106	104	101		102	100	98		98	97	95		95	94	92	90
2	105	98	93	89		102	97	92	88		93	89	86		90	87	84		87	85	82	81
3	97	89	83	78		95	88	82	77		85	80	76		82	78	75		80	77	74	72
4	91	81	74	69		89	80	74	68		78	72	68		76	71	67		74	69	66	64
5	85	74	67	62		83	73	66	61		71	65	61		69	64	60		68	63	59	58
6	79	68	61	55		77	67	60	55		66	59	55		64	59	54		63	58	54	52
7	74	63	55	50		73	62	55	50		61	54	50		59	54	49		58	53	49	47
8	70	58	51	46		68	58	51	46		56	50	46		55	49	45		54	49	45	43
9	66	54	47	42		64	53	47	42		52	46	42		51	46	42		51	45	42	40
10	62	50	44	39		61	50	43	39		49	43	39		48	43	39		47	42	38	37

For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Circle of Light Plot				
Height(ft)	Illuminance at Nadir (fc)	Ground-level distance to half-of-nadir illuminance (ft)		
		0-180 deg	90-270 deg	
6.0	31.0	5.72	5.27	
8.0	17.5	7.62	7.02	
10.0	11.2	9.53	8.78	
12.0	7.8	11.43	10.53	
14.0	5.7	13.34	12.29	
16.0	4.4	15.25	14.04	

Average Luminance (cd/m ²)			
	0 deg Plane	45 deg Plane	90 deg Plane
0	27014	27014	27014
45	13806	11018	10852
55	11442	8389	8458
65	3249	2496	1782
75	699	494	365
85	258	167	99

Spacing Criterion	
0 degree plane:	1.0
90 degree plane:	0.9
180 degree plane:	1.0
270 degree plane:	0.9



Report of Test

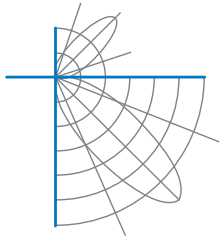
LLIA001421-002

UGR TABLE - CORRECTED

Reflectances										
Ceiling Cavity	70	70	50	50	30	70	70	50	50	30
Walls	50	30	50	30	30	50	30	50	30	30
Floor Cavity	20	20	20	20	20	20	20	20	20	20

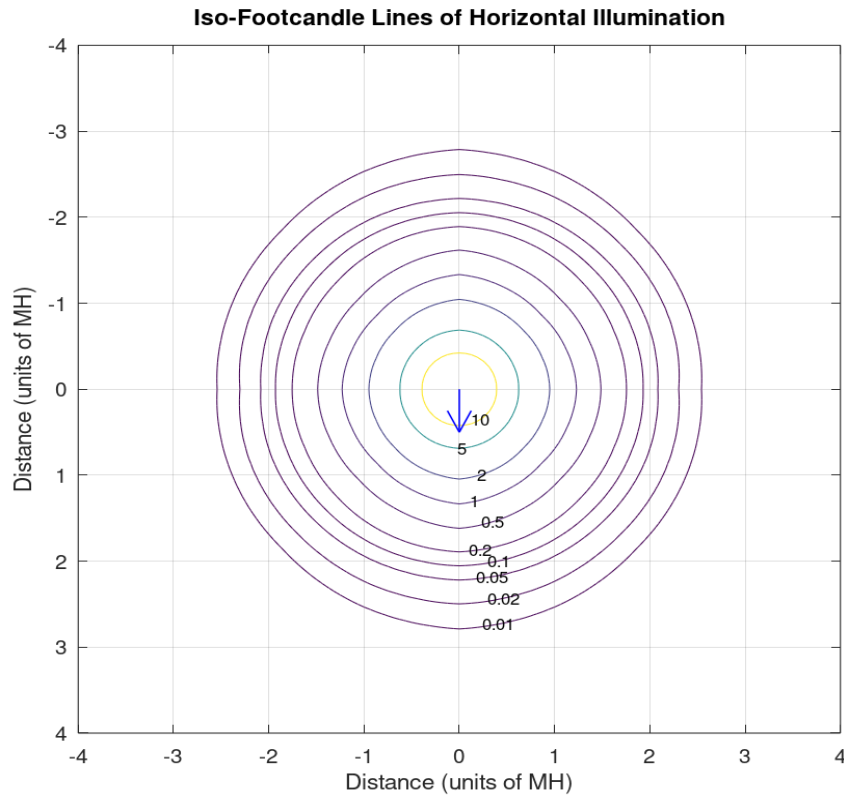
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	19.4	20.7	19.8	21.0	21.3	17.5	18.8	17.9	19.1	19.4
	3H	19.3	20.5	19.7	20.8	21.2	17.4	18.6	17.8	18.9	19.3
	4H	19.3	20.3	19.7	20.7	21.1	17.3	18.4	17.7	18.8	19.2
	6H	19.2	20.2	19.6	20.6	21.0	17.3	18.3	17.7	18.6	19.0
	8H	19.2	20.1	19.6	20.5	20.9	17.2	18.2	17.7	18.6	19.0
	12H	19.1	20.0	19.5	20.4	20.8	17.2	18.1	17.6	18.5	18.9
4H	2H	19.3	20.3	19.7	20.7	21.1	17.4	18.5	17.8	18.9	19.2
	3H	19.2	20.1	19.6	20.5	20.9	17.4	18.2	17.8	18.6	19.0
	4H	19.2	19.9	19.6	20.3	20.8	17.3	18.1	17.7	18.5	18.9
	6H	19.1	19.7	19.5	20.2	20.7	17.2	17.9	17.7	18.3	18.8
	8H	19.0	19.6	19.5	20.1	20.6	17.2	17.8	17.6	18.2	18.7
	12H	19.0	19.5	19.4	20.0	20.5	17.1	17.7	17.6	18.1	18.6
8H	4H	19.0	19.6	19.5	20.1	20.5	17.2	17.8	17.6	18.2	18.7
	6H	18.9	19.4	19.4	19.9	20.4	17.1	17.6	17.6	18.1	18.5
	8H	18.8	19.3	19.4	19.8	20.3	17.0	17.4	17.5	18.0	18.5
	12H	18.8	19.2	19.3	19.7	20.3	17.0	17.4	17.5	17.8	18.4
12H	4H	19.0	19.5	19.4	20.0	20.5	17.1	17.7	17.6	18.1	18.6
	6H	18.9	19.3	19.4	19.8	20.3	17.0	17.5	17.5	17.9	18.5
	8H	18.8	19.2	19.3	19.7	20.3	17.0	17.4	17.5	17.8	18.4

Maximum UGR = 21.3

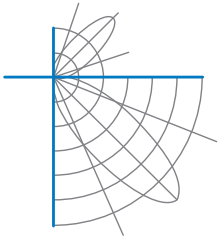


Report of Test
LLIA001421-002

Iso-Illuminance Plot



The isofootcandle values shown in the plot above are based on a mounting height of $h = 8.0$ feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.



Report of Test
LLIA001421-002

Additional Pictures of Test Subject





Report of Test

LLIA001421-002

Test Distance 9.5 m
Ambient Temperature 25.1 °C

Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of IES LM-79-19. Format of reports and angular increments based on IES LM-41-14 and LM-46-04.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE C-Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ‡ are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.